

**PRV**PATENT- OCH REGISTRERINGSVERKET  
Patentavdelningen

REC'D 18 JAN 2005

WIPO PCT

**Intyg  
Certificate**

Härmed intygas att bifogade kopior överensstämmer med de handlingar som ursprungligen ingivits till Patent- och registreringsverket i nedannämnda ansökan.

This is to certify that the annexed is a true copy of the documents as originally filed with the Patent- and Registration Office in connection with the following patent application.



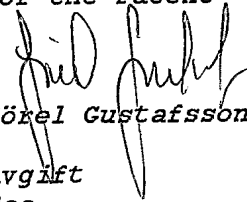
(71) Sökande AB Electrolux, Stockholm SE  
Applicant (s)

(21) Patentansökningsnummer 0303561-5  
Patent application number

(86) Ingivningsdatum 2003-12-30  
Date of filing

Stockholm, 2005-01-05

För Patent- och registreringsverket  
For the Patent- and Registration Office

  
Görel Gustafsson

Avgift  
Fee

**PRIORITY  
DOCUMENT**

SUBMITTED OR TRANSMITTED IN  
COMPLIANCE WITH RULE 17.1(a) OR (b)

Applicant: AB ELECTROLUX, 105 45 STOCKHOLM

P-10840

## A SAW BLADE FOR A HANDHELD WORKING TOOL

5

### Technical field

The subject invention refers to a saw blade intended for a handheld working tool, and the saw blade comprises a blade body having an outer periphery with a number of teeth arranged by fastening a separate part or through a local  
10 addition of a surface lining material.

### Background of the invention

Today saw blades intended for use in handheld cut-off machines are only marketed for specially trained personnel like fire-fighters. These saw blades are  
15 also used for saving operations following earthquakes. In all these operations it is important to be quick in order to save lives. Therefore it is necessary to use powerful handheld tools. Of course there is a certain risk to use these machines, but this risk is offset by the special training of the personnel. The saw blades used for these machines however produce fairly strong drive reactions to the operator.

20

### Summary of the invention

The purpose of the subject invention is to take away, or at least reduce, the above outlined disadvantages.

This purpose is achieved in a saw blade of the initially mentioned kind,  
25 wherein the teeth occupy only a minor part of the periphery of the saw blade and in that rotation-wise in front of at least one tooth there is a notch that runs towards the center of the saw blade and this notch has a narrow opening at the periphery and widens considerably inside the opening to a widened part and the widened part has a width that is greater than 1,3 times the width of the opening and preferably wider than  
30 two times its width. The narrow opening results in a very controlled feed of the saw blade when sawing. This makes the machine easier to hold and maneuver for the operator.

According to a preferred embodiment of the invention the front side of the tooth at the edge forms a negative rake angle, greater than 0 degrees but smaller than 30 degrees, preferably greater than 5 degrees but smaller than 20 degrees. This also contributes in making the working tool easier to control for the operator.

5

### **Brief description of the drawings**

The invention will be described in the following with reference to the accompanying drawing figures, which in the purpose of exemplifying are showing preferred embodiments of the invention.

10

Figure 1 illustrates in a side-view a saw blade according to a first embodiment of the invention.

Figure 2 illustrates an enlarged part of the saw blade of figure 1.

Figure 3 illustrates in a side-view a second embodiment of the invention.

15

### **Detailed description of preferred embodiments**

With reference to figure 1 a saw blade 1 according to a first embodiment of the invention is shown. The saw blade comprises a blade body 2 having an outer periphery 3 with a number of teeth 4 arranged by fastening. Usually each tooth is made up by a separate part such as a carbide tip, which is a preferred solution.

20

However, each tooth can also be arranged by a local addition of a surface lining material. One surface or a number of surfaces can be lined by this material that creates the especially hard tooth.

25

The teeth occupy only a minor part of the periphery 3 of the saw blade. This is distinctly different from a blade intended for grinding operations. Rotation-wise in front of at least one tooth 4 and preferably in front of every tooth there is a notch 5 that runs towards the center of the saw blade. This notch has a narrow opening 6 at the periphery. This narrow opening can be as small as 0,1 millimeter but can also be up to 7 millimeters wide. Preferably it is 0,5 – 4 millimeters wide. The narrow opening 6 widens considerably inside the opening to a widened part 7 and the widened part has a width b that is greater than 1,3 times the width a of the opening and preferably wider than two times its width, or preferably even wider than three times its width.

30

The tooth 4 has an edge 8 at its outer foremost end, i.e. first in the direction of rotation. The edge 8 has a radial distance c to the outer periphery of the

blade body at the opening 6 which distance is 0,1 – 5 millimeters and preferably 0,4 – 2 millimeters.

The front side 9 of the tooth 4 at the edge 8 forms a negative rake angle  $\alpha$  from the edge and to the center 11 of the saw blade, and the angle  $\alpha$  is greater than 0 degrees but smaller than 30 degrees, preferably greater than 5 degrees but smaller than 20 degrees. This negative rake angle  $\alpha$  in combination with the limited radial distance c produces a limited cut by each tooth and this is even true when the speed of the saw blade is low. Therefore the risk of damaging a tooth or loosing it completely has been reduced. This is of course also due to the narrow opening 6. All this also makes the working tool easier and safer to control for the operator. This is of course of major importance.

Each tooth 4 is permanently attached e.g. by welding or soldering or gluing to the blade body 2. The tooth is oriented with its longer side pointing roughly towards the center 11 of the saw blade. It is soldered or welded along one of its longer sides only. It is not fastened at the side being part of the narrow opening 6 but only at the opposite longer side. The blade body is usually made of metal and the blade is usually adapted to be attached to a center shaft or to be supplied with a center shaft. Usually the saw blade has a circular outer periphery 3. This contributes in making the handheld working tool easy to work with.

Figure 3 shows a second embodiment of the invention. Here the blade body 2 is arranged as an annular part supplied with at least one concentric groove 10 located between the inner and outer periphery. The inner periphery is arranged as a V-shaped surface for drive of the saw blade. This saw blade can be used in a so called ring-cutter machine. As it has no center shaft very deep cuts can be made with this machine. It enables the operator to cut through a concrete wall from one side. This is of course of vital importance during an earthquake rescue operation.

30

35

CLAIMS

- 5                   1. A saw blade (1) intended for a handheld working tool, and the saw blade comprises a blade body (2) having an outer periphery (3) with a number of teeth (4) arranged by fastening a separate part or through a local addition of a surface lining material, characterized in that the teeth occupies only a minor part of the periphery (3) of the saw blade and in that rotation-wise in front of at least a tooth (4) there is a notch (5) that runs towards the center of the saw blade and this notch has a narrow opening (6) at the periphery and widens considerably inside the opening to a widened part (7) and the widened part has a width (b) that is greater than 1,3 times the width (a) of the opening and preferably wider than two times its width.
- 10                   2. A saw blade (1) according to claim 1, wherein the tooth (4) has an edge (8) at its outer foremost end, i.e. first in the direction of rotation.
- 15                   3. A saw blade (1) according to claim 2, wherein the edge (8) has a radial distance (c) to the outer periphery of the blade body at the opening (6), which distance (c) is 0,1 – 5 millimeters and preferably is 0,4 – 2 millimeters.
- 20                   4. A saw blade (1) according to any of the preceding claims, wherein the front side (9) of the tooth (4) at the edge (8) forms a negative rake angle  $\alpha$  from the edge and to the center (11) of the saw blade, and the angle  $\alpha$  is greater than 0 degrees but smaller than 30 degrees, preferably greater than 5 degrees but smaller than 20 degrees.
- 25                   5. A saw blade according to any of the preceding claims, wherein each tooth (4) is permanently attached, e.g. by welding or soldering or gluing to the blade body (2).
- 30                   6. A saw blade (1) according to any of the preceding claims, wherein each tooth (4) is made from a carbide tip.
7. A saw blade (1) according to any of the preceding claims, wherein the blade body (2) is made of metal.
- 35                   8. A saw blade (1) according to any of the preceding claims, wherein the blade body (2) is adapted to be attached to a center shaft or to be supplied with a center shaft.

9. A saw blade (1) according to any of the claims 1-7, wherein the blade body (2) is arranged as an annular part supplied with at least one concentric groove (10) between the inner and outer periphery, and that the inner periphery is arranged as a V-shaped surface (12) for drive of the saw blade.

5

10. A saw blade (1) according to any of the preceding claims, wherein the blade body (2) has a circular outer periphery (3).

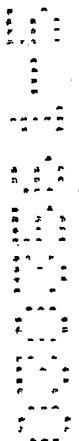
10

15

20

25

30



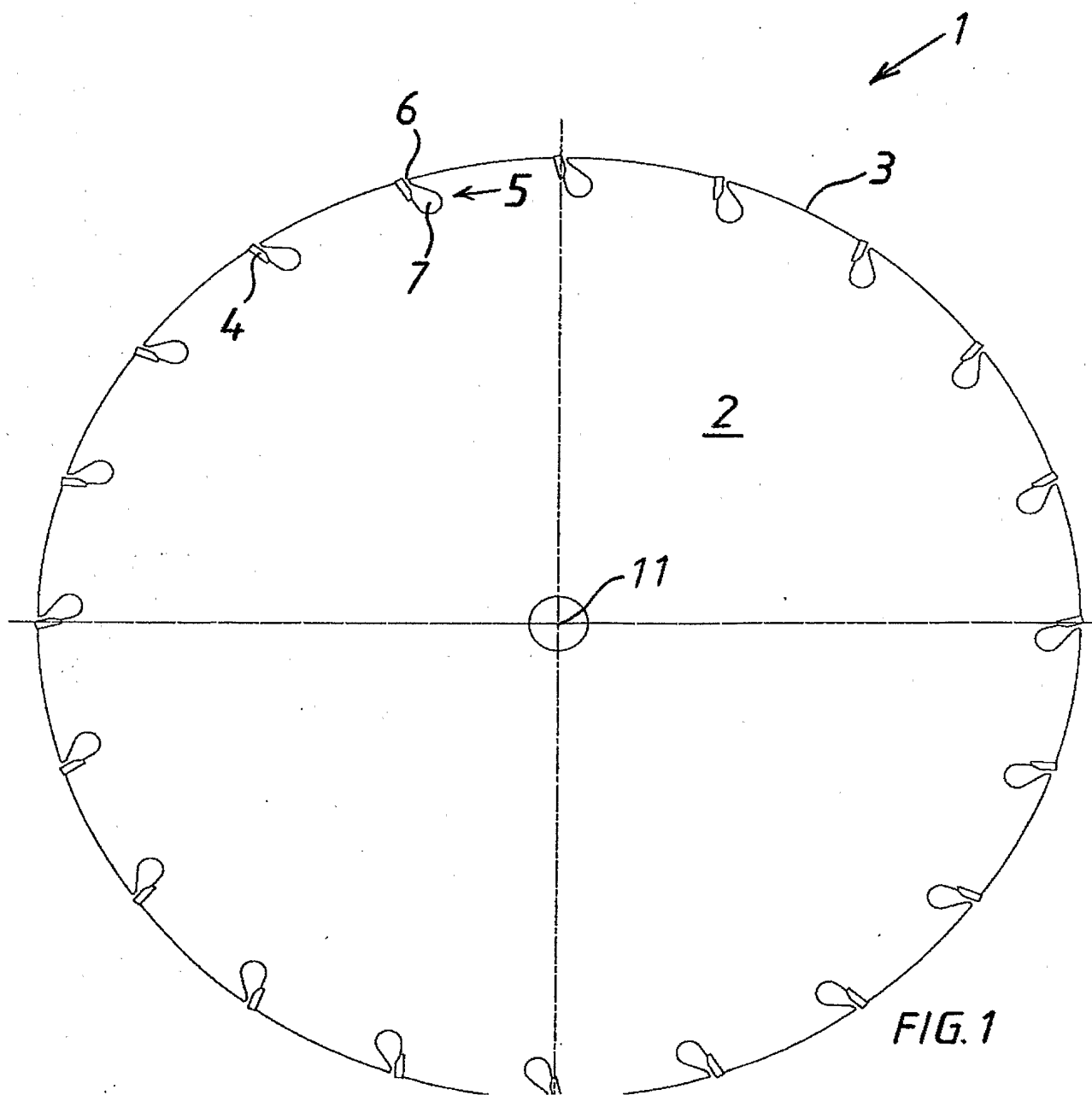
### ABSTRACT

A saw blade (1) intended for a handheld working tool, and the saw blade  
5 comprises a blade body (2) having an outer periphery (3) with a number of teeth (4)  
arranged by fastening a separate part or through a local addition of a surface lining  
material. The teeth occupy only a minor part of the periphery (3) of the saw blade and  
in that rotation-wise in front of at least a tooth (4) there is a notch (5) that runs  
towards the center of the saw blade and this notch has a narrow opening (6) at the  
10 periphery and widens considerably inside the opening to a widened part (7) and the  
widened part has a width (b) that is greater than 1,3 times the width (a) of the opening  
and preferably wider than two times its width.

15 (Fig. 2)

4  
1  
2  
3  
4  
5  
6  
7

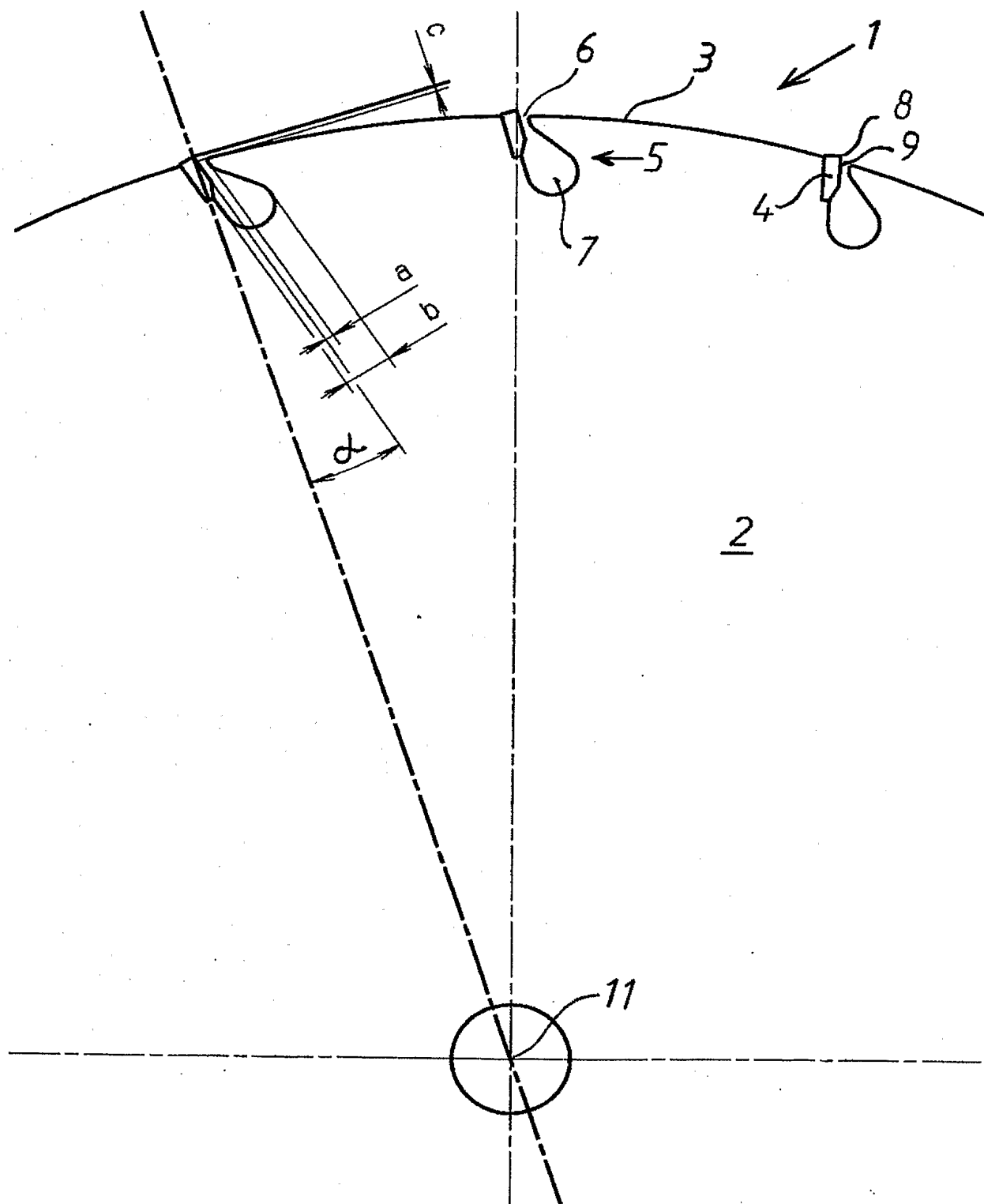
1/3





2/3

FIG.2



3/3

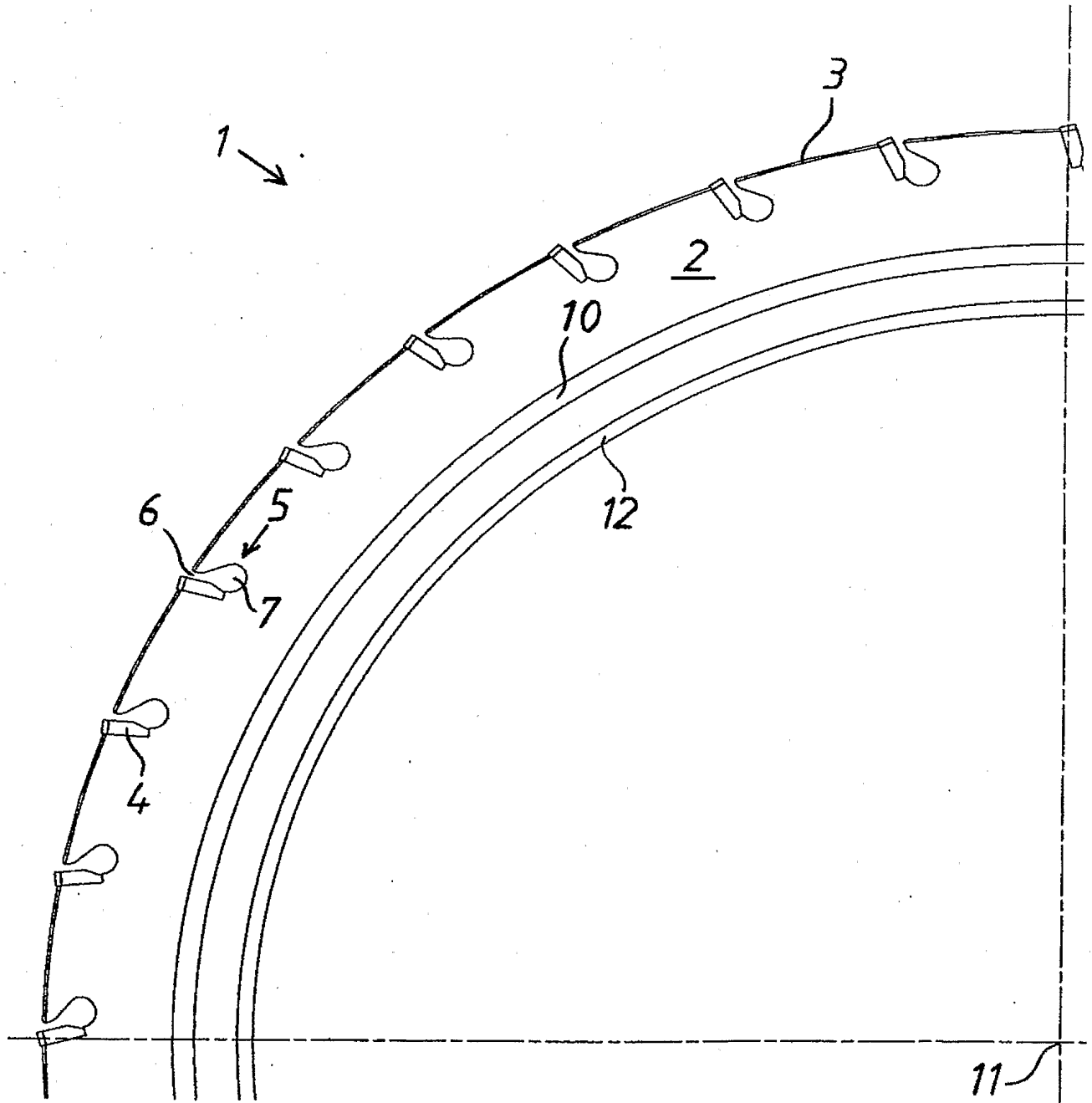


FIG 3

03-12-30 P